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ABSTRACT

In this study, the behavior and attitude patterns of high school juniors and seniors in northeastern Wisconsin have been examined with respect to recreational activities and water quality conditions. Most popular activities were identified in order as swimming, boating, fishing, waterskiing, sailing, and duck hunting. Location of participation in water-based recreational activity was determined and variables pertinent to particupation/non-participation were examined. Water quality evaluations by the students indicated that they seemed to be more concerned with the cosmetics of water quality (dead fish, unpleasant smell, and "junk at the bottom") than by harmful bacteria or chemicals in the water. The authors see the findings of the study as indicating that while students may be concerned, they do not seem to exhibit a level of environmental knowledge beyond that of the rest of the population even though their schools had recently made intensive environmental education efforts. (DT)

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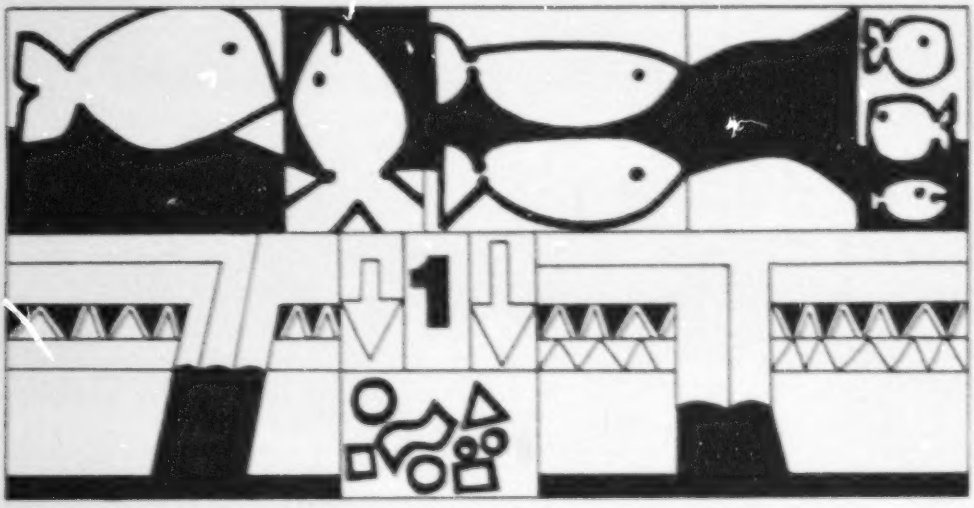

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A SURVEY OF RECREATION BEHAVIOR AND ATTITUDE PATTERNS OF HIGH SCHOOL JUNIORS AND SENIORS: IMPLICATIONS FOR ENVIRONMENTAL EDUCATION AND RESOURCE MANAGEMENT

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The University of Wisconsin-Green Bay students who administered the questionnaire and helped with coding were Barbara Delwiche, David MacWhirter, Ann Schoggen, Jane Stauffer, Faye McMahon, Mary Sherwin, Lorna Nowve, Mary Van Gheem and Harry Sorenson.

In addition, four individuals deserve special mention: Dr. David Jowett, UW-GB Professor of Environmental Control, Mrs. Jean Brien, Kurt Ruthmansdorder, UW-GB Computer Services Consultant and Paul Reince, a UW-GB senior. Without their assistance this study could not have been completed.

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INTRODUCTION

> "There is strong authority for the view that the age of 21 years [as the age of majority] was directly linked with the ability to hold up a heavy suit of armor and lift a lance at the same time. There is also a view that suits of armor were too expensive to be furnished to those under the age of 21 years who might grow out of them. In any event, 21 years, the knightly age of majority, filtered down and became the universal age of all classes."*

While the knightly age of majority was abandoned long ago in favor of having 18 year olds serve in our armed forces, the right to vote and subsequent stake in political affairs were denied 18, 19 and 20 year olds until the passage of the 26th amendment to the U.S. Constitution in July 1971. With the lowering of the age of majority in Wisconsin in March 1972, 18, 19 and 20 year olds were granted all of the rights and responsibilities of adulthood. What makes this age group even more important is the increasing proportion of young people (24 and younger) in the population.

Except for their purchasing power, little is known about this youth group. Because of their education, it is assumed that they are more environmentally aware than their parents, but are they? Much of the fiscal burden for solving today's environmental problems, along with the problems themselves, will fall to coming generations, so water quality and recreational policy formulation will need to reflect the wishes and opinions of the young adult constituency. It is important, therefore, that as much as possible be learned about their use of and attitudes toward the environment.

Past research focusing on high school students' knowledge of pollution (Fowler and Swan, 1972) suggests, disconcertingly, that students are not that knowledgeable about their environment and the causes of environmental problems. Swan also notes, in probing high school youths' responses to air pollution, that their environmental concern is not correlated with knowledge about air pollution, but rather with awareness of air pollution.

* U.S. Senate, Committee on the Judiciary, 91st Congress, 2nd Session, 1970, p. 544-545.

While there has been extensive research on the water quality requirements and perceptions of both recreation users and representative samples (Barker, 1967; Bishop and Aukerman, 1970; Willeke, 1968; David, 1971; and Simpson and Kamitakahara, 1971), all have focused on adults or on samples unidentified by age. As yet, there have been no investigations of age differences in water quality requirements, perceptions and related attitudes. For a complete review of the literature in this area, see Ditton and Goodale, Marine Recreational Uses of Green Bay: A Study of Human Behavior and Attitude Patterns, University of Wisconsin Sea Grant Technical Report #217, pages 39-49.

Previous survey research (Ditton and Goodale, 1972) examined the recreational behavior and water quality attitudes of heads of households residing in the five county area surrounding Green Bay.

In this study, the behavior and attitude patterns of high school juniors and seniors in the five county area have been examined with respect to recreational activities and water quality conditions. What follows constitutes the highlights of this study. A longer version, with more detailed analysis of the experimental method and findings, can be obtained from the authors or from the Sea Grant Communications Office, 1225 West Dayton Street, Madison, WI 53706.

The data gathered in this study, taken with previous data on heads of households, provides comprehensive information useful in decision making for parks, recreation and water quality improvement. This study of high school juniors and seniors should also provide a useful feedback to educators in the region who are involved with ecology or environmental education courses. By studying juniors and seniors it may be possible to predict changes in societal behavior, attitudes and perceptions that may be evolving. Also, government officials and decision makers may have more information on the environmental priorities of these future voters.

METHOD

In 1972-73 there were 10,650 high school juniors and seniors in the five-county area bordering the bay of Green Bay (Door, Kewaunee, Brown, Oconto and Marinette Counties -- see Figure 1). The area contained

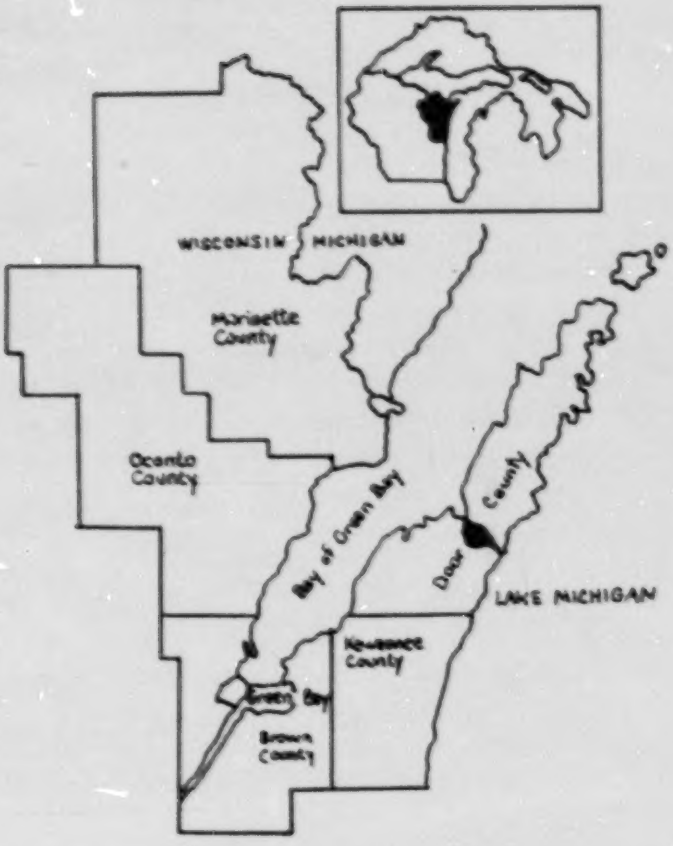

FIGURE 1: GREEN BAY AND THE FIVE-COUNTY STUDY AREA

32 public and five private high schools. Thirteen public schools were randomly selected for the study, with a predetermined minimum of two schools per county. A sample of 100 juniors and seniors was either randomly selected using class rosters or, in the case of the smaller schools with less than 100 upper classmen, every junior and senior present was given a questionnaire. In addition, 50 students from each of two private schools which were segregated by sex were identified to complete the sample.

An interview schedule used by Ditton-Goodale in the 1972 study was modified for use as a questionnaire with high school students. The questionnaire was administered at each school by students from the University of Wisconsin-Green Bay who had received training in the administration of questionnaires. Questionnaires were given during a two-week period in early November 1972, which was considered to be close enough to the summer when recreational activity among youth is high and recall among the students would still be great. Of the 1,400 questionnaires distributed, 1,031 were completed and usable for analysis.

OBJECTIVES

The objectives of this research project can be broken down into two major categories:

Recreational Participation

1. To identify and report participation in swimming, boating, fishing, waterskiing, sailing and duck hunting by juniors and seniors in high schools within the five-county study area in northeastern Wisconsin.
2. To determine the location of their participation in water-based recreational activity on Green Bay and elsewhere.
3. To evaluate the significance of variables pertinent to participation/nonparticipation in water recreation activities.

Water Quality Perception

1. To report water quality evaluations and assess the relationship between these evaluations and behavior patterns.
2. To probe attitudes toward improving water quality.

FINDINGS

Water Recreational Participation

The student sample demonstrated a high rate of participation in water-based recreational activities. Of the 1,031 respondents, 989 (95.8%) reported participation one or more times during the previous 12 months in at least one of the water-based activities studied (swimming, fishing, boating, waterskiing, sailing and duck hunting). Pointing to the overall popularity of swimming, boating and fishing, 989, or nearly all participants, engaged in one of these three activities.

Swimming was most popular among the respondents, with 949 having participated during the previous year. Swimming was followed in popularity by boating (718), fishing (641), waterskiing (387), sailing (222), and duck hunting (173). These figures indicate the number of individuals participating in each activity at least once, and do not reflect intensity of participation. Using frequency of participation data, it was possible to determine the primary water recreation activity for each respondent. Swimming was the primary water recreation activity for 741 of the 989 participants (74.9%), followed by fishing with 119 (12.0%) and boating with 80 (8.1%). While it is important to know whether or not an activity was engaged in at all, it is more revealing to know which activity is engaged in most frequently.

Primary Location

Using the data on which location was used for each activity, it was determined which location served as the focal point for each activity. While it was previously noted that a small proportion of participants used the bay at least once, this analysis revealed that an even smaller number of individuals used the bay as their primary location. Data indicated that among boaters, waterskiers and swimmers, inland lakes were twice as popular as any other location. Inland lakes were also the most preferred location for sailors. The primary locations for fishermen and duck hunters were streams and rivers, with inland lakes a close second.

In spite of size, potential and accessibility, Green Bay and Lake Michigan were not focal points of water-based activities for the high school students. Green Bay was the second most used location for boating, waterskiing and sailing and was the least preferred location for fishing. Lake Michigan was not ranked higher than third among preferred locations for any activity.

When respondents were asked to indicate why they chose their primary location for each of three activities (swimming, fishing, boating), proximity was the most frequently reported reason. "Clean water" was the next most frequently cited reason by swimmers and boaters, while fishermen were concerned with their "catch." Concern for proximity can perhaps be understood in light of the limited mobility of the student population.

Deterrents to Participation

Participants were also asked to state the major reasons why they did not participate or participate as much as they wanted to in boating, fishing and swimming. The major reasons cited for not participating were lack of ability, equipment or interest; the third a possible function of the first two. Participants did not swim more because of cold water and travel distance involved; did not boat more because of lack of a boat; and did not fish more because they lacked a boat, interest or fishing success. Only a small proportion of the total sample cited environmental concerns such as water quality and crowding as the major deterrents to increased participation.

Perceptions of Green Bay Water Quality

When asked to describe the waters of Green Bay, the respondents were generally severe in their judgements. The answers to this open-ended question were coded into a clean-dirty continuum and it was found that 76% of the sample judged the bay as being either "dirty" or "somewhat dirty." Only 11% said that the bay was "clean" or "somewhat clean." Well-documented contrasts in water quality for different areas of the bay were recognized by only 5% of the sample who said quality "depends on location." The remaining 8% said they didn't know. Overall, responses appeared to be related to place of residence, as shown by the fact that a smaller proportion of Door County students indicated that the bay was "dirty," as compared to students from Brown County (39% and 65%, respectively).

To better understand which characteristics of water were most bothersome or important to respondents, the survey included two questions dealing with more specific water quality characteristics. From the lists given, each student was asked to choose which water characteristic was most bothersome to bay users and also the one characteristic he/she disliked most about the bay. The responses were as follows:

Water too cold	9.6 %	Water is cloudy	8.5 %
Unpleasant smell	37.7	Chemicals	9.0
Winds	1.4	Harmful bacteria	8.1
Waves	3.1	Suds, film or foam on water	28.4
Junk on bottom	33.8		
Too many weeds	14.5	Dead fish	46.0
	100.1 %		100.0 %

Both lists, taken together, indicate that the students were most concerned about dead fish, unpleasant smell and "junk on the bottom."

Water Condition Changes and Responses

A series of hypothetical questions were put to the students regarding past changes in water quality at their primary recreational locations; the likelihood of future water quality deterioration there; and their probable behavioral responses to such deterioration. Approximately one-third of the participants indicated that conditions had gotten worse at the place they usually swam, boated or fished. Fishing activity would appear to be most drastically affected by further deteriorated conditions in that one-fifth, or 20% of the fishermen said they would give up their activity as compared to 15% of the swimmers and boaters. The largest number reported that they would move their activity to an alternate location, not on Green Bay, if conditions deteriorated at their primary location (which was in most cases the inland lakes). Swimmers exhibited the greatest confidence in the water quality, with 40% indicating that they felt this choice would not have to be made. This is understandable, given the fact that they use inland lakes or pools where conditions are more stable as their primary locations.

Funding for Improved Water Quality

When respondents were asked to indicate whether they felt the federal government should put more money into improving water quality and if so, to what degree, they responded generously. The vast majority, or 92.5%, favored some increase in such expenditures. When asked to identify which government program the money for improving water quality should be taken from, the Space Program was singled out by over half of the sample. A

majority (86.4%) of the respondents indicated that the funds should come from either Space, Defense or International Aid Programs.

IMPLICATIONS

From the findings it was clear that the young people in the sample were all fairly similar in their perceptions and attitudes toward Green Bay. First of all, in their description of the bay, the respondents tended to overgeneralize conditions near their residence on the bay to the bay as a whole. They were, in general, extremely harsh in their evaluation of Green Bay water quality, even though this condition varies significantly in different locations of the bay.

Secondly, they seemed to be concerned with the cosmetics of water quality. More reported being most bothered by dead fish and unpleasant smells than by harmful bacteria or chemicals in the water, though the latter represent the long-standing concerns of public health officials. The discovery that such a small number of respondents were primarily concerned with winds, waves and cold water -- long recognized as real hazards for Great Lakes users -- has implications for the U.S. Coast Guard in their recreational safety program.

These findings on the students' water quality evaluation of Green Bay were not expected in light of the recent intensive environmental education efforts in the schools. Students have taken part in at least three state-wide and national "Earth Day" programs and have been constantly exposed to media efforts geared to increased environmental sensitivity. To take students beyond the awareness stage, courses in ecology and environmental problems have been instituted in schools to transmit knowledge and encourage students to develop personal values regarding the environment. Because of these efforts, it has been widely assumed that the current generation of students has reached a level of environmental awareness and knowledge unattained in the past. The findings of this study indicate that while students may be concerned, as shown by their willingness to have increased federal spending for water quality and by the extremes in their evaluation of bay water, they do not seem to

exhibit a level of environmental knowledge beyond that of the rest of the population.

The implication here is that many of the current environmental education programs might not be imparting knowledge that can be used and interpreted by students in dealing with real environmental problems.

If students of today are primarily concerned with the cosmetic aspects of water quality, several questions are raised as to how water quality problems are to be solved. In the face of such findings, decision makers may proceed with solutions, attractive because of their public visibility. For example, making the water clear may be given higher priority than curtailing sources of bacterial contamination because the latter is visible only to water chemists and sanitary engineers. Following this line of reasoning, the public might be satisfied with efforts to improve water clarity but be reluctant to support attempts to eliminate less visible contamination.

Similarly, decision makers who are already aware of water quality problems and have pursued solutions to them may find it difficult to convince the public that any improvement has been made. While considerable amounts of money have been spent to improve water quality by industries and municipalities in the Fox River Valley, it would be exceedingly difficult to convince the general public that conditions have improved.

While the data provide no ready solutions to these dilemmas, one recommendation would be for industrial and public officials to make a more concerted effort to interpret their solutions in terms understandable to the public. For example, if a new treatment plant or process is claimed to result in an improvement in water quality, a concurrent effort to demonstrate that the water is, in fact, more usable as a result, should take place. This means less emphasis should be put on hardware displays and parameter discussions and more emphasis should be put on improved or expanded uses of water resources.

OVERVIEW

The completion of this report allows some comparisons to be made between high school students' responses and the initial data collected on heads of households in the five-county study area.

A number of contrasts between the two samples were found. The students exhibited a considerably higher participation rate, a more diversified recreation pattern, a more severe general evaluation of Green Bay's water quality, and a greater willingness to allocate funds for water quality improvement. Whether these contrasts are due to age differences or real differences due to environmental awareness can only be ascertained through longitudinal studies in the region. While it is probable that participation rates do decline with age, the magnitude of that decline is unknown. This is only one of several questions yet to be answered. Another is whether age, experience and the necessity of tax payments will temper the severity of the students' judgements and their fiscal generosity.

RELATED SEA GRANT PUBLICATIONS

Marine Recreational Uses of Green Bay: A Study of Human Behavior and Attitude Patterns. R. Ditton, T. Goodale.
WIS-SG-72-217

Marine Recreational Uses of Green Bay: A Survey of Human Behavior and Attitude Patterns of High School Juniors and Seniors. R. Ditton, P. Johnson.

Recreational Uses of Green Bay: Bay/Non-Bay Users Compared.
R. Ditton, T. Goodale.
WIS-SG-73-334.

Water Quality Perception and the Recreational Uses of Green Bay, Lake Michigan. R. Ditton, T. Goodale.
WIS-SG-73-340.

The Future of Boating on Lake Michigan. Session highlights from 1970 Sea Grant Conference, R. Ditton chairman.

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